DESCRIPTION

Systems Biology is now entering a mature phase in which the key issues are characterising uncertainty and stochastic effects in mathematical models of biological systems. The area is moving towards a full statistical analysis and probabilistic reasoning over the inferences that can be made from mathematical models. This handbook presents a comprehensive guide to the discipline for practitioners and educators, in providing a full and detailed treatment of these important and emerging subjects. Leading experts in systems biology and statistics have come together to provide insight into the major ideas in the field, and in particular methods of specifying and fitting models, and estimating the unknown parameters.

This book:

- Provides a comprehensive account of inference techniques in systems biology.
- Introduces classical and Bayesian statistical methods for complex systems.
- Explores networks and graphical modeling as well as a wide range of statistical models for dynamical systems.
- Discusses various applications for statistical systems biology, such as gene regulation and signal transduction.
- Features statistical data analysis on numerous technologies, including metabolic and transcriptomic technologies.
- Presents an in-depth presentation of reverse engineering approaches.
- Provides colour illustrations to explain key concepts.
This handbook will be a key resource for researchers practising systems biology, and those requiring a comprehensive overview of this important field.

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